WHAT IS CLAIMED IS:

1. A method for applying light from a light source to a recording medium and detecting the light reflected from the recording medium, the method comprising the steps of:

diffracting the reflected light;

applying the diffracted light such that the focal points of the ±1 diffraction orders are offset from each other along the optical axis of the zeroth diffraction order with the focal point of the zeroth diffraction order being between the focal points of the ±1 diffraction orders;

increasing the diameter of at least the zeroth diffraction order at least in a direction substantially perpendicular to a track of the recording medium; and

determining the position of at least one light spot formed by the zeroth diffraction order at first photo-detecting means divided at least in a direction substantially perpendicular to the track of the recording medium.

2. A method for applying light from a light source to a recording medium and detecting the light reflected from the recording medium, according to Claim 1, the method further comprising the step of:

determining the sizes of light spots formed by the ±1

diffraction orders by second photo-detecting means and third photo-detecting means individually divided in a direction substantially parallel to the track of the recording medium.

3. A method for applying light from a light source to a recording medium and detecting the light reflected from the recording medium, according to Claim 1, further comprising the step of:

determining the position of the light spot formed by the zeroth diffraction order at a plurality of the first photo-detecting means disposed in a direction substantially parallel to the track of the recording medium.

4. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light reflected from a recording medium, the optical-data-detecting device comprising:

a holographic element for diffracting the reflected light and disposing the focal points of the ±1 diffraction orders to be offset from each other along the optical axis of the zeroth diffraction order with the focal point of the zeroth diffraction order being between the focal points of the ±1 diffraction orders;

an optical element for increasing the diameter of at least the zeroth diffraction order at least in a direction

substantially perpendicular to a track of the recording medium; and

first photo-detecting means divided at least in a direction substantially perpendicular to the track of the recording medium, for determining the position of at least one light spot formed by the zeroth diffraction order.

5. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light reflected from a recording medium, according to Claim 4, the optical-data-detecting device further comprising:

second photo-detecting means and third photo-detecting means individually divided in a direction substantially parallel to the track of the recording medium, for determining the sizes of light spots formed by the ±1 diffraction orders.

6. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light reflected from a recording medium, according to Claim 4, wherein a plurality of the first photo-detecting means for determining the position of the light spot formed by the zeroth diffraction order are disposed in a direction substantially parallel to the track of the recording medium.

7. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light reflected from a recording medium, according to Claim 4, wherein the optical element comprises a flat plate which is inclined with respect to the optical axis of the light reflected from the recording medium.

8. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light reflected from a recording medium, according to Claim 7, the optical-data-detecting device further comprising:

rotation means for rotating the flat plate about the optical axis of the light reflected from the recording medium.

9. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light reflected from a recording medium, according to Claim 4, wherein the optical element reflects the light from the light source, applies the reflected light to the recording medium, and transmits the light which has been reflected by the recording medium.

10. A reading-writing apparatus for optical data, which performs at least one of reading and writing of the

optical data with light from a light source being applied to a recording medium, the reading-writing apparatus comprising:

a holographic element for diffracting the light reflected by the recording medium and disposing the focal points of the ±1 diffraction orders to be offset from each other along the optical axis of the zeroth diffraction order with the focal point of the zeroth diffraction order being between the focal points of the ±1 diffraction order;

an optical element for increasing the diameter of at least the zeroth diffraction order at least in a direction substantially perpendicular to a track of the recording medium;

first photo-detecting means divided at least in a direction substantially perpendicular to the track of the recording medium, for determining the position of at least one light spot formed by the zeroth diffraction order; and

control means for controlling the relative position between the track of the recording medium and the light applied to the track of the recording medium by using a differential output from the first photo-detecting means.

11. A reading-writing apparatus, which performs at least one of reading and writing of the optical data with light from a light source being applied to a recording

medium, according to Claim 10, further comprising:

second photo-detecting means and third photo-detecting means individually divided in a direction substantially parallel to the track of the recording medium, for determining the sizes of light spots formed by the ±1 diffraction orders,

wherein said control means determines the focal point of the light applied to the recording medium by using an output from the second photo-detecting means and the third photo-detecting means.

12. A reading-writing apparatus, which performs at least one of reading and writing of the optical data with light from a light source being applied to a recording medium, according to Claim 10, wherein a plurality of the first photo-detecting means for determining the position of the light spot formed by the zeroth diffraction order are disposed in a direction substantially parallel to the track of the recording medium.

13. A reading-writing apparatus, which performs at least one of reading and writing of the optical data with light from a light source being applied to a recording medium, according to Claim 10, wherein the optical element comprises a flat plate which is inclined with respect to the

optical axis of the light reflected from the recording medium.

14. A reading-writing apparatus, which performs at least one of reading and writing of the optical data with light from a light source being applied to a recording medium, according to Claim 13, further comprising:

rotation means for rotating the flat plate about the optical axis of the light reflected from the recording medium.

15. A reading-writing apparatus, which performs at least one of reading and writing of the optical data with light from a light source being applied to a recording medium, according to Claim 13, wherein the optical element reflects the light from the light source, applies the reflected light to the recording medium, and transmits the light which has been reflected by the recording medium.

16. A method for detecting optical data by applying light from a light source to a recording medium and detecting by a photo-detector the light which has been reflected by the recording medium and which carries data from the recording medium, the method comprising the steps of:

diffracting the reflected light into ±1 diffraction orders and zeroth diffraction order so as to dispose the focal points of the ±1 diffraction orders to be offset from each other along the optical axis of the zeroth diffraction order with the focal point of the zeroth diffraction order being between the focal points of the ±1 diffraction orders;

detecting the zeroth diffraction order by the photo-detector by increasing the diameter of the zeroth diffraction order in a direction substantially perpendicular to the direction of a track of the recording medium; and

detecting the ±1 diffraction orders by the photo-detector, the ±1 diffraction orders forming circular light spots on the photo-detector.

17. A method for detecting optical data by applying light from a light source to a recording medium and detecting by a photo-detector the light which has been reflected by the recording medium and which carries data from the recording medium, according to Claim 16, wherein an optical element is laminated on the photo-detector, the zeroth diffraction order is applied to the photo-detector when the diameter of the zeroth diffraction order is increased by the optical element in a direction substantially perpendicular to the direction of the track, and the ±1 diffraction orders are applied to the photo-

detector so as to form the circular light spots on the photo-detector.

18. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light which has been reflected by the recording medium and which carries data from the recording medium, the optical-data-detecting device comprising:

a holographic element for diffracting the light reflected by the recording medium into ±1 diffraction orders and zeroth diffraction order and disposing the focal points of the ±1 diffraction orders to be offset from each other along the optical axis of the zeroth diffraction order with the focal point of the zeroth diffraction order being between the focal points of the ±1 diffraction orders;

a photo-detector disposed at the diffraction light-emission side of the holographic element, for detecting the ±1 diffraction orders and the zeroth diffraction order; and

an optical element laminated on a light-receiving surface of the photo-detector, for applying the zeroth diffraction order to the photo-detector while increasing the diameter of the zeroth diffraction order in a direction substantially perpendicular to the direction of a track of the recording medium, and applying the ±1 diffraction orders to the photo-detector so that the ±1 diffraction orders form

circular light spots on the photo-detector.

19. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light which has been reflected by the recording medium and which carries data from the recording medium, according to Claim 18, wherein the optical element comprises a flat plate including sections to which the zeroth diffraction order and the ±1 diffraction orders are respectively applied, the flat plate having different thicknesses according to the sections.

20. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light which has been reflected by the recording medium and which carries data from the recording medium, according to Claim 18, wherein the optical element through which the zeroth diffraction order is transmitted comprises a section which is formed as a lens for increasing the diameter of the zeroth diffraction order in a direction substantially perpendicular to the track.

21. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light which has been reflected by the

recording medium and which carries data from the recording medium, according to Claim 18, wherein the optical element through which the zeroth diffraction order is transmitted comprises a section which is formed as a cylindrical lens having a curvature in a direction substantially perpendicular to the track.

22. An optical-data-detecting device for applying light from a light source to a recording medium and detecting the light which has been reflected by the recording medium and which carries data from the recording medium, according to Claim 18, wherein the optical element serves as a protective material for protecting the light-receiving surface of the photo-detector.

23. A reading-writing apparatus for reading and writing optical data, comprising:

a light source;

driving means for driving a recording medium for rotation;

an optical head for applying light from the light source to the rotating recording medium via an objective lens which is movably supported and detecting by a photo-detector via the objective lens the light which has been reflected by the recording medium and which carries data

from a data-recording surface of the recording medium, the optical head comprising:

a holographic element for diffracting the light reflected by the recording medium into ±1 diffraction orders and zeroth diffraction order and disposing the focal points of the ±1 diffraction orders to be offset from each other along the optical axis of the zeroth diffraction order with the focal point of the zeroth diffraction order being between the focal points of the ±1 diffraction orders;

a photo-detector disposed at the diffraction light-emission side of the holographic element, for detecting the ±1 diffraction orders and the zeroth diffraction order; and

an optical element laminated on a light-receiving surface of the photo-detector, for applying the zeroth diffraction order to the photo-detector while increasing the diameter of the zeroth diffraction order in a direction substantially perpendicular to the direction of a track of the recording medium, and applying the ±1 diffraction orders to the photo-detector so that the ±1 diffraction orders form circular light spots on the photo-detector;

a signal-processing circuit for forming a read signal in accordance with a detection signal outputted from the photo-detector; and

a servo control circuit for moving the objective lens in accordance with the detection signal outputted from the

photo-detector.

24. A reading-writing apparatus for reading and writing optical data, according to Claim 23, wherein the optical element comprises a flat plate including sections to which the zeroth diffraction order and the ±1 diffraction orders are respectively applied, the flat plate having different thicknesses according to the sections.

25. A reading-writing apparatus for reading and writing optical data, according to Claim 23, wherein the optical element through which the zeroth diffraction order is transmitted comprises a section which is formed as a lens for increasing the diameter of the zeroth diffraction order in a direction substantially perpendicular to the track.

26. A reading-writing apparatus for reading and writing optical data, according to Claim 23, wherein the optical element through which the zeroth diffraction order is transmitted comprises a section which is formed as a cylindrical lens having a curvature in a direction substantially perpendicular to the track.

27. A reading-writing apparatus for reading and writing optical data, according to Claim 23, wherein the

optical element serves as a protective material for protecting the light-receiving surface of the photo-detector.